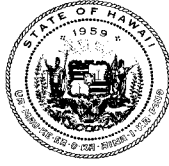


BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



LAWRENCE MIIKE  
DIRECTOR OF HEALTH

**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**

P.O. BOX 3378  
HONOLULU, HAWAII 96801

November 3, 1997

In reply, please refer to:  
EMD /SDWB

To All Interested Parties:

SUBJECT: 1997 GROUNDWATER CONTAMINATION MAPS FOR THE  
STATE OF HAWAII

Since August, 1989, the Department of Health has been issuing the Groundwater Contamination Maps for the State of Hawaii. These maps identify locations where groundwater contaminants have been detected and confirmed.

We are enclosing information pertaining to the major health effects related to these contaminants. We emphasize that the detected levels reported in the maps are below existing Federal and State drinking water standards established for the protection of public health. Before contaminant levels reach these standards, we take appropriate public health protection measures.

The data presented in the maps and tables were collected prior to September, 1997. Positive results are considered confirmed when verified by a different test or by the validation of historical data through resampling and analysis.

If you have any questions or would like to obtain additional information related to groundwater contamination, please contact the Groundwater Protection Program, Safe Drinking Water Branch, at (808) 586-7550.

Sincerely,

A handwritten signature in cursive script, reading "Lawrence Miike".

LAWRENCE MIIKE  
Director of Health

Enclosures

# The Groundwater Contamination Maps for the State of Hawaii, 1997

---

## Purpose

The Groundwater Contamination Maps identify organic chemical contaminants that have been detected and confirmed in wells used for drinking water, irrigation, and industrial purposes throughout the State. Groundwater can become contaminated through natural processes, but introduced contamination pose more serious problems. These contaminants may come from the use of herbicides, pesticides, industrial solvents, and other forms of chemicals onto land surfaces and subsurfaces, and the occurrences of spills and leaks. This is a significant concern because nearly all of our drinking water comes from groundwater sources.

The intent of the maps is to identify only those wells with detectable levels of groundwater contamination. Some contaminated wells may not be reported because of the lack of confirmed data or wells have not been tested. The contamination levels that are reported, refer to approximate levels of contamination that are valid for a specific sampling date. Levels of groundwater contamination may fluctuate for a number of reasons, including actual diminishing or increasing levels of contamination, chemical breakdown of contaminants, variances in sampling and analytical methods, the effects of pumping rates, and other factors.

## Contents

This report consists of maps and tables for the islands of Kauai, Oahu, Maui, Molokai, Lanai, and Hawaii. Maps identify the locations of contaminated wells and wellfields (an area where many wells in close proximity share the same groundwater source). Tables relate information about the contaminated well, such as the use of the well (e.g., drinking water, irrigation, industrial or unused), the contaminant detected, the concentration of the contaminant (e.g., detected level), the sampling date when contamination was detected, and drinking water standards and health risks associated with each contaminant. In cases where wellfields are identified, the well or pump in that wellfield with the highest concentration of a contaminant is reported.

A contaminant which had been identified in prior editions will be removed from the report if subsequent monitoring shows that it is no longer detectable at below the reported contamination level. A well will be removed from the map if it does not show any detectable concentrations of contamination. But a well and associated contaminant(s) will remain on the map until new information can confirm that concentrations have decreased to non-detectable levels. This is the case with several irrigation wells in this report that were on previous editions where the lack of data prevents any updates of their status.

Reports of contamination are received from all sources of groundwater monitoring, and contaminants tested are chosen by those groundwater monitoring agencies and may not be consistent with the groundwater testing program of the State Department of Health.

# The Groundwater Contamination Maps for the State of Hawaii, 1997

---

## Summary

In general, the concentration of chemical contaminants found in our wells have been detected at levels below State and Federal drinking water standards. These levels do not pose a serious health risk. The water from drinking water wells with detected contaminant concentrations that are increasing are closely monitored. If contamination levels approach State and Federal drinking water regulatory limits, then water is treated to reduce concentrations to safe levels, or the well is temporarily or permanently taken out of service.

We have included new information on contamination from Atrazine, a regulated herbicide used statewide. In their study on pesticide use, DOA had monitored selected wells on Kauai and Maui in areas where Atrazine had been applied extensively. They had used the Enzyme Linked Immunosorbent Assay (ELISA) analysis method to detect concentrations of this contaminant.

The following is a listing of the contaminants that have been detected in groundwater supplies. (Refer to the pages on Applicable Drinking Water Standards for definitions of the acronyms.)

Primary contaminants on Oahu include: Alachlor, Ametryn, Atrazine, Desethyl Atrazine, Despropyl Atrazine, Diamino Atrazine, Chlordane, Dieldrin, DBCP, DCP, EDB, PCE, TCE, and TCP.

Primary contaminants on Maui include: Ametryn, Atrazine, Desethyl Atrazine, Despropyl Atrazine, Diamino Atrazine, Diuron, DBCP, EDB, Simazine, and TCP.

Primary contaminants on Hawaii include: Atrazine, Desethyl Atrazine, Despropyl Atrazine, Diamino Atrazine, Hexazinone, and Simazine.

Primary contaminants on Kauai include: Ametryn, Atrazine, Desethyl Atrazine, and Simazine.

Molokai and Lanai did not have any reported SOC and VOC contaminants.

Since the 1996 edition, the following wells were removed from these maps because contaminant concentrations were not detected: Napili B and C wells on Maui, and the Kilohana I well on Kauai. The following wells were added because of new detection of contaminants: Halawa Wells Pump II on Oahu, Ookala Well on Hawaii, and Paua Valley 2 well on Kauai.

# The Groundwater Contamination Maps for the State of Hawaii, 1997

---

## Definitions

The following are general definitions of the terms and abbreviations that are used in this report:

### Concentration Level:

Refers to the amount of a contaminant found in a sample, the numerical values are presented in units ppb (parts per billion).

ppb: This unit is commonly used as an equivalent to microgram per liter (ug/L), and relates to the example of approximately a drop of contaminant in the volume of liquid contained in three Olympic size swimming pools.

### Contaminant:

The contaminants identified in the report refer to chemical contaminants. DOH has defined contaminants as, "...any physical, chemical, biological, or radiological substance or matter in water. An additive contaminant under this definition may have a beneficial or detrimental effect on the potability of the water." (Hawaii Administrative Rules, Title 11, Department of Health, Chapter 20 Rules Relating to Potable Water Systems)

### Detection Limit:

Refers to the lowest concentration of a contaminant that can be measured by a laboratory through its testing equipment, analysis methods, and personnel.

### ND:

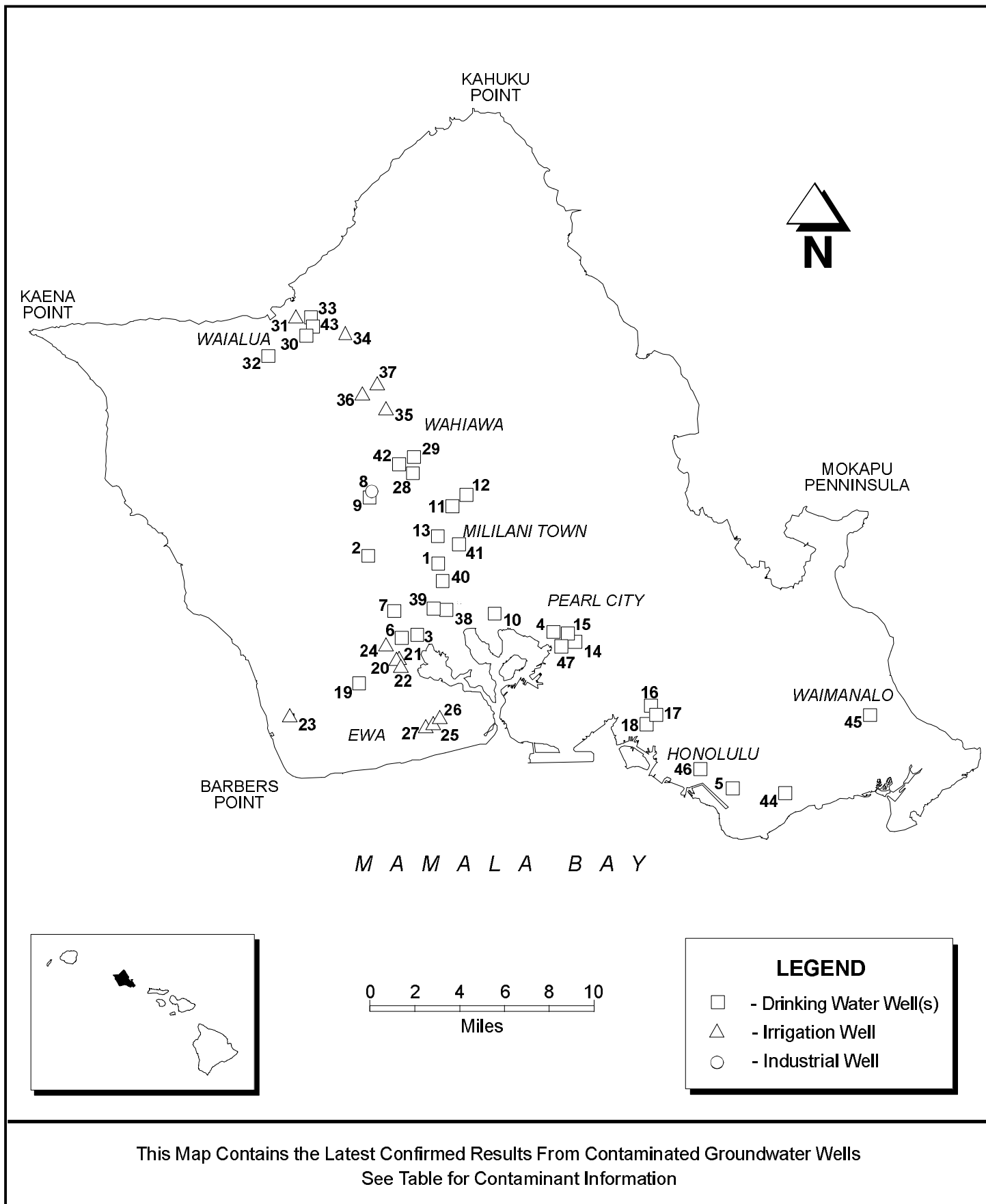
Refers to non-detected, where the concentration of a contaminant was less than the detection limit used by a laboratory.

### NQ:

Refers to non-quantifiable, where a trace concentration of a contaminant was at a level greater than the detection limit but lower than the quantification limit used by a laboratory.

Quantification limit: refers to the level of contaminant concentration that can be confidently quantified by a laboratory's testing equipment, analysis methods, and personnel.

# Groundwater Contamination on the Island of Oahu



**GROUNDWATER CONTAMINATION ON THE ISLAND OF OAHU**

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
1	Dairy Co. (2600-02)	DW	TCE TCP	<0.5 NQ <0.5 NQ	7/23/97 7/23/97
2	Hawaii Country Club (2603-01)	DW	DBCP before treatment after treatment EDB before treatment after treatment TCP before treatment after treatment	0.06 <0.02 ND <0.04 NQ <0.01 ND <0.5 NQ <0.2 ND	7/24/97 7/24/97 7/24/97 7/24/97 7/24/97 7/24/97
3	Hoaeae (2301-34 to 39)	DW	Atrazine Desethyl Atrazine TCP	0.063 <0.10 <0.5 NQ	8/28/96 9/28/93 5/22/97
4	Kaamilo Wells (2356-58 and 59)	DW	PCE Dieldrin	0.03 <sup>+</sup> 0.016	4/20/85 1/2/97
5	Kaimuki (1748-03 to 10)	DW	PCE Dieldrin	0.03 <sup>+</sup> 0.016	4/23/85 7/2/97
6	Kunia Wells I (2302-01 to 04)	DW	Atrazine Desethyl Atrazine TCP	0.085 <0.10 0.7	1/23/97 9/28/93 5/21/97
7	Kunia Wells II (2402-01,02,03)	DW	Atrazine Desethyl Atrazine DBCP before treatment after treatment TCP before treatment after treatment TCE before treatment after treatment	<0.10 <0.10 <0.04 NQ <0.02 ND 1.0 <0.2 ND 1.0 <0.2 ND	9/28/93 9/28/93 5/22/97 5/22/97 5/22/97 5/22/97 5/22/97 5/22/97
8	Kunia Battery (2803-03 and 04)	IND	Atrazine Desethyl Atrazine PCE TCE	0.05 NQ 0.05 NQ 1.65 3.7	9/28/93 9/30/92 4/23/85 7/24/85
9	Kunia Del Monte (2803-05 and 07)	DW	Carbon Tetrachloride before treatment after treatment TCE before treatment after treatment DCP before treatment after treatment TCP before treatment after treatment PCE before treatment after treatment	<0.5 NQ <0.2 ND 3.4 <0.2 ND <1.0 NQ <0.3 ND <0.5 NQ <0.2 ND <0.5 NQ <0.2 ND	7/22/97 7/22/97 7/22/97 7/22/97 7/22/97 7/22/97 7/22/97 7/22/97 7/22/97 7/22/97
10	Manana (2458-01)	DW	PCE	0.03 <sup>+</sup>	4/18/85

DW - Drinking Water Well(s)  
IRR - Irrigation Well  
IND - Industrial Well  
UNU - Unused  
NQ - Non-quantifiable  
ND - Non-detected

<sup>+</sup> - Samples taken after this date do not show the presence of this contaminant.  
Methodology changes raised the detection limit for PCE from 0.01 ppb to 0.2 ppb

## GROUNDWATER CONTAMINATION ON THE ISLAND OF OAHU (continued)

NO.	WELL NAME	USE	CONTAMINANT		DETECTED LEVEL (in ppb)		DATE SAMPLED
11	Mililani I (2800-01 to 04)	DW	DBCP	before treatment after treatment	0.15 <0.02	ND	7/22/97 7/22/97
			DCP	before treatment after treatment	<1.0 <0.3	NQ ND	7/22/97 7/22/97
			TCP	before treatment after treatment	2.9 <0.2	ND	7/22/97 7/22/97
12	Mililani II (2859-01 and 02)	DW	DBCP	before treatment after treatment	0.17 <0.02	ND	4/17/97 4/17/97
			DCP	before treatment after treatment	<1.0 <0.3	NQ ND	4/17/97 4/17/97
			TCP	before treatment after treatment	2.6 <0.2	ND	4/17/97 4/17/97
13	Mililani III (2600-03 and 04)	DW	DBCP	before treatment after treatment	0.06 <0.02	ND	10/18/96 10/18/96
			DCP	before treatment after treatment	<1.0 <1.0	NQ NQ	10/18/96 10/18/96
			TCP	before treatment after treatment	1.9 <0.2	ND	10/18/96 10/18/96
14	BWS Halawa Wells Pump 1 and 2 (2255-39 and 37)(BWS Halawa Wells)	DW	Chlordane Dieldrin		<0.3 0.029	NQ	7/2/97 7/2/97
15	Aiea Wells (2355-06 and 07)	DW	Dieldrin		0.014		2/20/97
16	Kamehameha Schools Wells 1 & 2 (2052-07 and 11) (only 2052-11 taken out of service)	DW	Chlordane Dieldrin		<0.3 0.032	NQ	4/10/97 4/10/97
17	Jonathan Springs Well (2052-12) (taken out of service)	DW	Chlordane Dieldrin		0.3 0.06		11/8/95 11/8/95
18	Kalihi Pumping Station (1952-06 to 08, 16-19, 22)	DW	Dieldrin		0.010		7/2/97
19	Barbers Pt. Shaft (2103-03)	DW	Atrazine Desethyl Atrazine		0.071 0.17		7/8/97 10/28/92
20	OSCO Ewa Pump 3 (2202-03)	UNU	Atrazine Desethyl Atrazine		<0.10 0.13	NQ	11/10/92 11/10/92
21	OSCO Ewa Pump 5 (2202-05)	UNU	Atrazine Desethyl Atrazine		0.15 0.14		11/10/92 11/10/92
22	OSCO Ewa Pump 7A (2202-15) (also called Pump 8)	UNU	Atrazine Desethyl Atrazine		<0.10 <0.10	NQ NQ	11/10/92 11/10/92

DW - Drinking Water Well(s)  
 IRR - Irrigation Well  
 IND - Industrial Well  
 UNU - Unused  
 NQ - Non-quantifiable  
 ND - Non-detected

## GROUNDWATER CONTAMINATION ON THE ISLAND OF OAHU (continued)

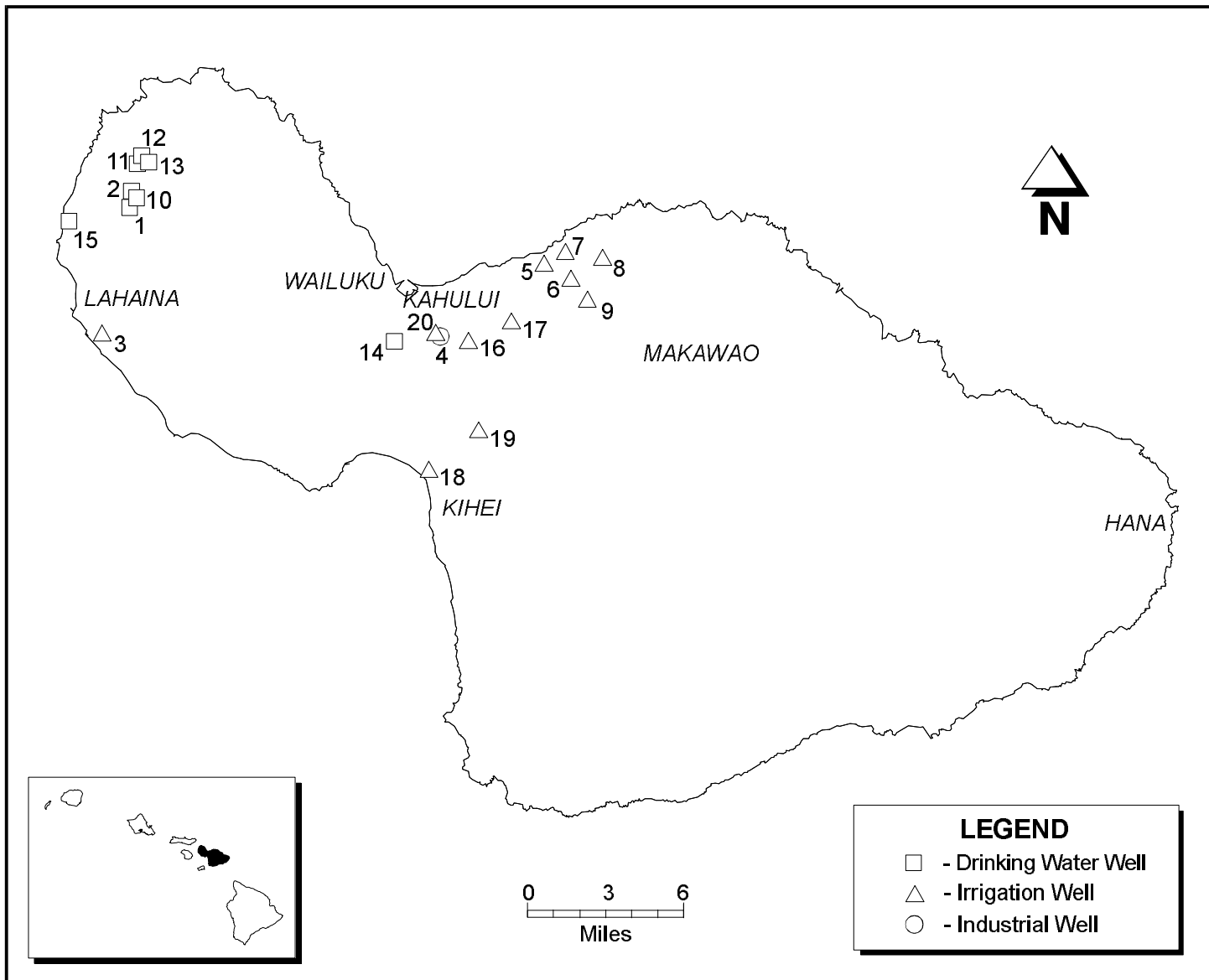
NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
23	OSCO Ewa Pump 10 (2006 -01 to 11)	UNU	Atrazine Desethyl Atrazine	<0.10 0.15	NQ 11/17/92
24	OSCO Ewa Pump 15 (2202-21)	UNU	Atrazine Desethyl Atrazine	0.15 0.12	11/17/92 11/17/92
25	OSCO Ewa Pump 20 (1900-01)	UNU	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine Ametryn	0.71 1.2 0.13 0.22 0.05	11/16/93 11/16/93 11/16/93 11/16/93 NQ 11/10/92
26	OSCO Ewa Pump 21 (2000-01)	UNU	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine	0.77 1 0.13 0.25	11/16/93 11/16/93 11/16/93 11/10/92
27	OSCO Ewa Pump 24 (1901-01)	UNU	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine Ametryn	1.10 1.59 0.21 0.50 0.11	11/10/92 11/10/92 11/10/92 11/10/92 11/10/92
28	Schofield Battery (2901-03, 04)	DW	TCE before treatment after treatment PCE before treatment after treatment	11.5 <0.2 <0.5 <0.2	ND 7/22/97 NQ 7/22/97 ND 7/22/97
29	Wahiawa Wells (2901-08, 11, 12)	DW	Carbon Tetrachloride PCE DBCP	0.6 1.2 <0.04	4/17/97 4/17/97 NQ 4/17/97
30	Waialua Wells (3405-01,02)	DW	TCE TCP DBCP	<0.5 <0.5 <0.04	NQ 4/25/97 NQ 4/25/97 NQ 7/29/96
31	Haleiwa Battery (3506-03)	IRR	Atrazine Lindane	0.13 0.002	11/4/92 11/12/87
32	Waialua P2 Battery (3307-01)	DW	Atrazine Desethyl Atrazine	0.12 0.15	11/04/92 11/04/92
33	Waialua Sugar P3 (3505-01 to 20)	DW	DBCP TCP	<0.04 <0.5	NQ 7/24/97 NQ 7/24/97
34	Waialua Sugar P17 (3404-02)	IRR	DBCP TCP	0.06 1.1	11/9/93 11/9/93
35	Waialua Sugar P24 (3102-02)	IRR	DBCP TCP	0.020 0.500	8/20/84 6/3/85
36	Waialua Sugar P25 (3203-01)	IRR	DBCP	0.115	6/7/83
DW - Drinking Water Well(s) IRR - Irrigation Well IND - Industrial Well UNU - Unused NQ - Non-quantifiable ND - Non-detected					



## GROUNDWATER CONTAMINATION ON THE ISLAND OF OAHU (continued)

NO.	WELL NAME	USE	CONTAMINANT		DETECTED LEVEL (in ppb)		DATE SAMPLED
37	Waialua Sugar P26 (3203-02)	IRR	DBCP		0.012		6/3/85
			TCP		0.800		6/3/85
38	Waipahu I (2400-01, 02, 03, 04)	DW	EDB	before treatment	<0.04	NQ	7/22/97
				after treatment	<0.01	ND	7/22/97
			TCP	before treatment	<0.5	NQ	7/22/97
				after treatment	<0.2	ND	7/22/97
39	Waipahu II (2400-05, 06)	DW	EDB	before treatment	0.04	NQ	7/24/97
				after treatment	<0.01	ND	7/24/97
			TCP	before treatment	<0.5	NQ	7/24/97
				after treatment	<0.5	NQ	7/24/97
40	Waipio Hts. II (2500-01, 02)	DW	TCE		0.5		3/7/97
			TCP		0.7		3/7/97
41	Waipio Hts. Wells III (2659-03)	DW	EDB		<0.04	NQ	7/22/97
			TCP		<0.5	NQ	7/22/97
42	Wahiawa Wells II (2902-01)	DW	Carbon Tetrachloride		<0.5	NQ	4/23/97
			PCE		<0.5	NQ	4/23/97
43	Haleiwa Wells (3405-03, 04)	DW	DBCP		0.04		7/31/97
			TCP		<0.5	NQ	7/31/97
44	Aina Koa Well (1746-01)	DW	Dieldrin		0.014		7/2/97
45	Waimanalo Well I (2043-02) (taken out of service)	DW	Alachlor		1.7		3/16/95
46	Wilder Well I (1849-14)	DW	Dieldrin		0.01 <sup>☆</sup>		2/19/97
47	Aiea Halawa Shaft (2255-32) (Navy Halawa Well)	DW	Chlordane		<0.30	NQ	7/8/97
			Dieldrin		0.017		7/8/97
<div style="border: 1px solid black; padding: 5px; width: fit-content;">           DW - Drinking Water Well(s)            IRR - Irrigation Well            IND - Industrial Well            UNU - Unused            NQ - Non-quantifiable            ND - Non-detected         </div> <p>☆ - latest monitoring results do not show the presence of this contaminant. This well will be removed from the list if the contaminant is not detected in subsequent monitoring (ideally through one annual weather cycle, including wet and dry seasons).</p>							

# Groundwater Contamination on the Island of Maui



This map contains the latest confirmed results from contaminated groundwater wells

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
1	Kaanapali P4 (5739-01)	DW	TCP	before treatment	5/19/97
				after treatment	8/6/97
			1.3		
			<0.2	ND	
2	Kaanapali P6 (5739-02)	DW	DBCP	before treatment	8/6/97
				after treatment	8/6/97
			0.152		
			<0.02	ND	
3	Lahaina Pump A (5440-02)	IRR	Atrazine	0.11	11/02/83
4	Puunene Pump 7A (5227-04)	IND	Atrazine	1.0	7/29/85
			EDB	0.040	3/12/85
5	Lower Paia #16 (5423-02)	IRR	Atrazine	0.18 <sup>◇</sup>	3/11/97

◇ - DOA Immunoassay analysis

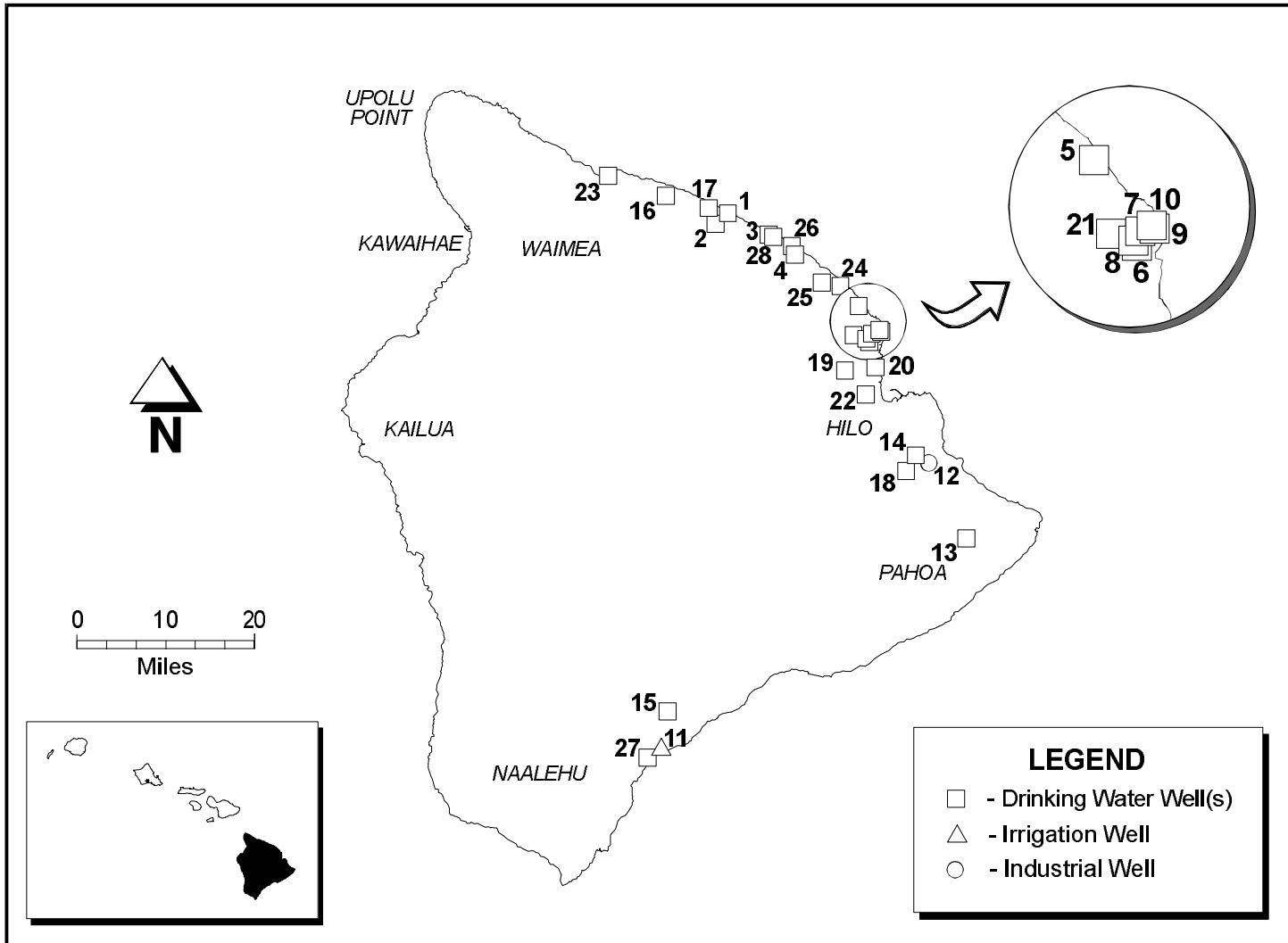
Groundwater Contamination on the Island of Maui (continued)

This map contains the latest confirmed results from contaminated groundwater wells						
NO.	WELL NAME	USE	CONTAMINANT		DETECTED LEVEL (in ppb)	DATE SAMPLED
6	Paia #17 (5422-02)	IRR	Atrazine EDB		0.23 $\diamond$ 0.028	3/11/97 3/4/85
7	Kuau Pump 12 (5522-01)	IRR	TCP		0.430	3/4/85
8	Maui High School (Old) (5420-01)	IRR	DBCP EDB TCP		0.091 0.067 0.430	3/4/85 3/4/85 3/4/85
9	Kaheka #18 (5321-01)	IRR	DBCP EDB TCP		0.018 0.050 0.13	8/16/89 8/16/89 8/16/89
10	Kaanapali P5 (5738-01)	DW	TCP	before treatment after treatment	1.1 <0.2 ND	5/19/97 8/6/97
			DBCP	before treatment after treatment	0.22 <0.02 ND	8/6/97 8/6/97
11	Napili A (Closed) (5838-01)	DW	DBCP		0.360	6/4/93
12	Maui Reynolds Well #1 (5228-06) (taken out of service)	DW	DBCP		<0.040 NQ	2/16/93
13	Kaanapali Pump D (5641-01)	IRR	Atrazine Ametryn Despropyl Atrazine Diamino Atrazine Simazine		1.66 $\diamond$ 1.4 0.12 0.15 0.82	3/11/97 6/1/93 6/1/93 6/1/93 6/1/93
14	Puunene Pump 6 (5226-02)	IRR	Atrazine Desethyl Atrazine		0.47 $\diamond$ 0.23	3/11/97 3/15/94
15	Puunene Pump 9 (5224-02)	IRR	Atrazine Desethyl Atrazine		0.09 $\diamond$ <0.10 NQ	3/11/97 6/15/93
16	Kihei Well I (4727-01)	IRR	Atrazine Ametryn Desethyl Atrazine Diamino Atrazine		0.54 $\diamond$ <0.10 NQ 0.32 <0.10 NQ	3/11/97 6/22/93 6/22/93 6/22/93
17	Kihei Well 3 (4825-01)	IRR	Atrazine Desethyl Atrazine		0.35 $\diamond$ 0.19	3/11/97 3/15/94
18	Puunene Mill Pump 19 (5227-05)	IRR	Atrazine Ametryn Desethyl Atrazine Diamino Atrazine		0.45 $\diamond$ <0.10 NQ 0.33 <0.10 NQ	3/11/97 6/22/93 3/15/94 6/22/93

DW - Drinking Water Well(s)  
IRR - Irrigation Well  
IND - Industrial Well  
NQ - Non-quantifiable  
ND - Non-detected

$\diamond$  - DOA Immunoassay analysis

# Groundwater Contamination on the Island of Hawaii



This map contains the latest confirmed results from contaminated groundwater wells

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
1	Paauilo Shaft (6321-02)	DW	Atrazine Hexazinone	0.590 1.10	2/28/95 9/9/86
2	Paauilo Well (6223-01)	DW	Atrazine	0.430	10/23/96
3	Ookala Shaft (6117-07) (taken out of service)	DW	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine	0.60 1.00 0.16 0.15	9/11/96 1/12/93 1/12/93 1/12/93
4	Laupahoehoe Wells (5814-01, 02)	DW	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine Hexazinone	0.14 0.82 0.23 0.17 1.3	10/23/96 1/12/93 1/12/93 1/12/93 9/25/90
5	Hakalau School Well (5307-01)	DW	PCE	0.130 <sup>+</sup>	5/6/85

<sup>+</sup> - Samples taken after this date do not show the presence of this contaminant.  
Methodology changes raised the detection limit for PCE from 0.01 ppb to 0.2 ppb

# Groundwater Contamination on the Island of Hawaii (continued)

This map contains the latest confirmed results from contaminated groundwater wells						
NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED	
6	Kulaimano (5006-01)	DW	Atrazine Hexazinone Diuron	0.38 0.3 0.6	10/23/96 8/05/91 <sup>R</sup> 8/05/91 <sup>R</sup>	
7	Pepeekeo Sugar Makai (5005-01) (HCPC Lower Well)	DW	Atrazine Desethyl Atrazine Hexazinone Diuron	<0.500 0.8 0.3 0.5	NQ 1/22/96 12/14/93 8/05/91 <sup>R</sup> 8/05/91 <sup>R</sup>	
8	Pepeekeo Sugar (5005-02) (HCPC Upper Well)	DW	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine Hexazinone Diuron	<0.500 1.2 0.15 0.14 0.9 0.8	NQ 1/22/96 12/14/93 12/14/93 12/14/93 8/05/91 <sup>R</sup> 8/05/91 <sup>R</sup>	
9	HCPC Makai Well 2 (5005-03)	DW	Atrazine Desethyl Atrazine	0.27 0.22	12/1/92 12/1/92	
10	HCPC Makai Well (5005-04)	DW	Atrazine Desethyl Atrazine	0.05 0.07	12/14/93 12/14/93	
11	Punaluu Th-2 (0830-02)	IRR	Atrazine Desethyl Atrazine	0.12 0.16	12/21/93 12/21/93	
12	Keeau (1938-07)	IND	Atrazine Ametryn	0.260 0.880	2/27/84 2/27/84	
13	Pahoa Battery (2986-01 and 02) (Pahoa Deep Well, Pump 1 and 2)	DW	Atrazine Desethyl Atrazine	0.5 0.5	NQ NQ 12/15/92 12/15/92	
14	Keeau I (3802-01)	DW	Atrazine Desethyl Atrazine	0.03 0.03	NQ NQ 12/15/92 12/15/92	
15	Pahala (1229-01)	DW	Atrazine Desethyl Atrazine	0.16 0.19	10/24/96 12/18/92	
16	Haina Well (6528-01)	DW	Atrazine Desethyl Atrazine Diamino Atrazine	0.11 0.38 0.11	5/5/97 1/12/93 1/12/93	
17	Big Island Meat Co. (6323-01)	DW	Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine	< 0.500 0.55 0.15 0.12	NQ 1/22/96 1/12/93 1/12/93 1/12/93	

DW - Drinking Water Well(s)  
IRR - Irrigation Well  
IND - Industrial Well  
UNU - Unused  
NQ - Non-quantifiable  
ND - Non-detected

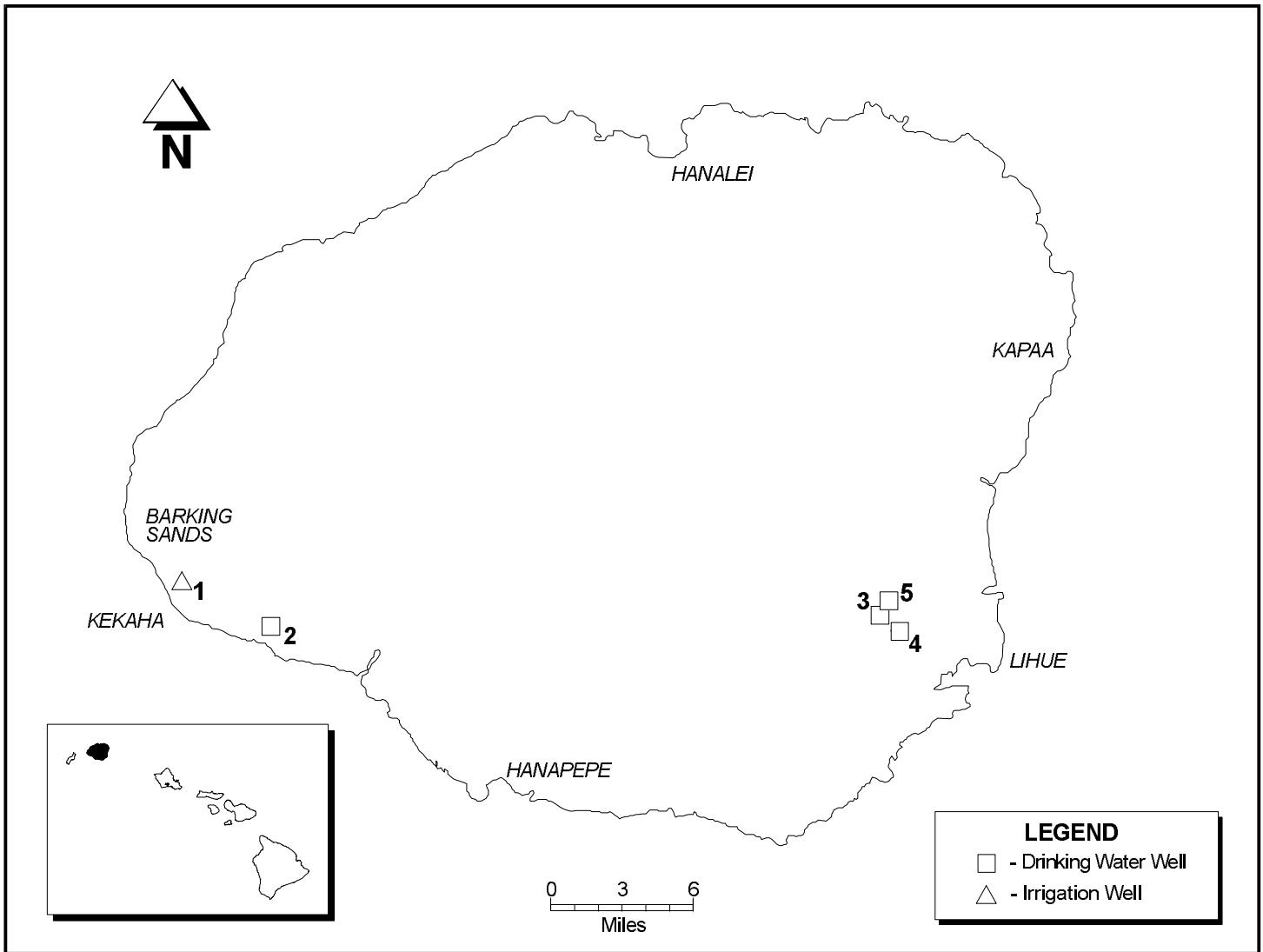
R - date received by lab

# Groundwater Contamination on the Island of Hawaii (continued)

This map contains the latest confirmed results from contaminated groundwater wells

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
18	Olaa 3 (3603-01)	DW	Desethyl Atrazine	0.06 NQ	12/21/93
19	Papaaloa Spring (5713- )	DW	Atrazine	0.560	2/28/95
20	Chaves Spring (5610- )	DW	Atrazine	0.340	10/23/96
21	Maukaloa Spring (5006- )	DW	Atrazine Hexazinone Simazine	0.32 0.56 0.20	10/23/96 9/24/86 10/23/96
22	Kaieie Spring (4708- )	DW	Atrazine	0.370	10/23/96
23	Waiuliuli Spring (6734-01)	DW	Atrazine Hexazinone	0.210 0.72	10/23/96 9/9/85
24	Kaiaakea Spring ( 5611- )	DW	Hexazinone	0.47	9/9/86
25	Kihalani Spring (5813 - )	DW	Hexazinone	0.57	9/9/86
26	Manowaiopae Spring (5814 - )	DW	Atrazine	0.14	10/23/96
27	Ninole A and B (0831-02,03)	DW	Atrazine	0.086	7/7/97
28	Ookala Well (6017-05)	DW	Atrazine	0.760	7/8/97
<div>           DW - Drinking Water Well(s)            IRR - Irrigation Well            IND - Industrial Well            UNU - Unused            NQ - Non-quantifiable            ND - Non-detected         </div>					

# Groundwater Contamination on the Island of Kauai

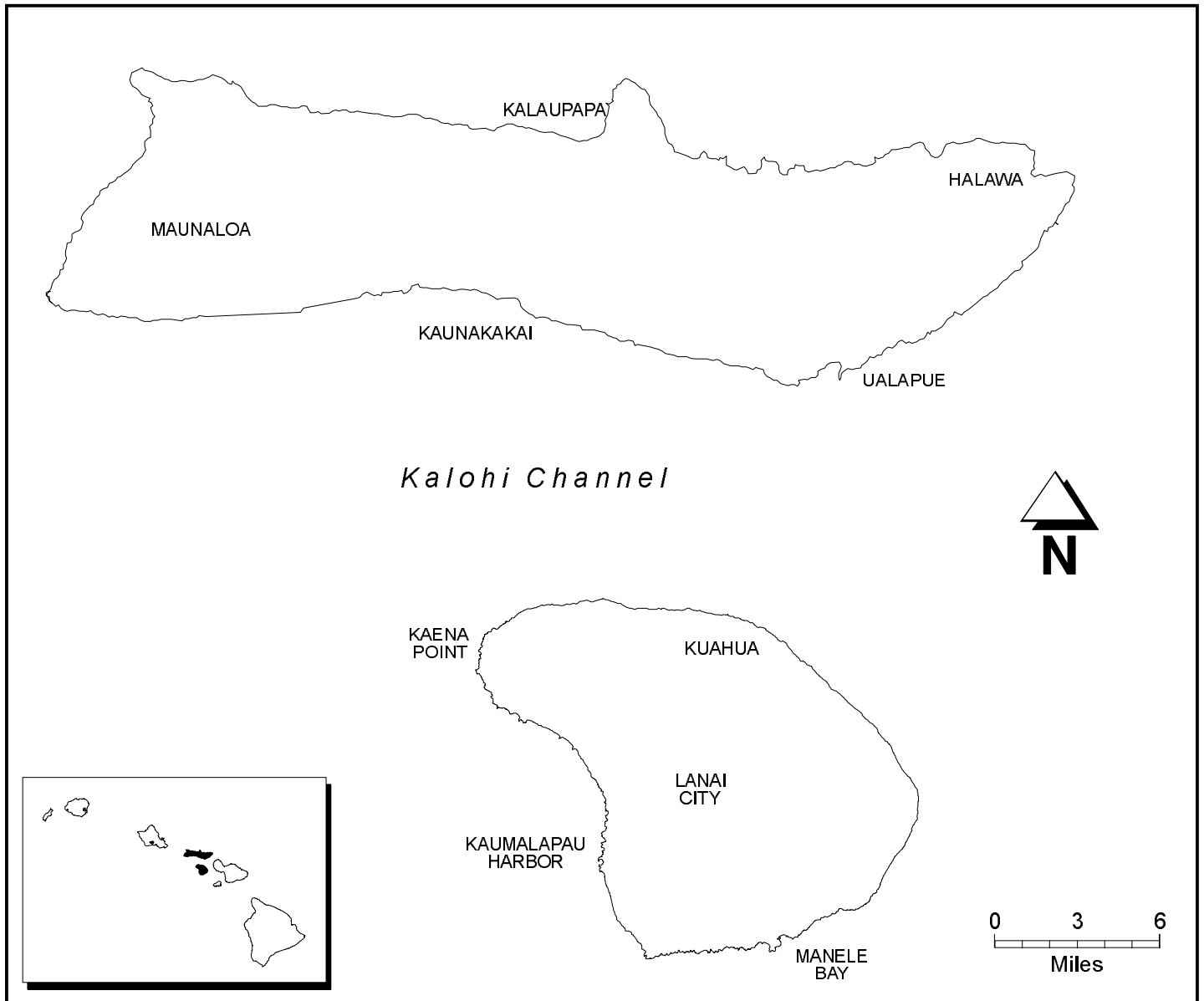


This map contains the latest confirmed results from contaminated groundwater wells

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
1	Barking Sands (0045-04)	IRR	Atrazine Ametryn Simazine	3.5 0.80 0.20	7/12/88 7/12/88 7/12/88
2	Paua Valley 2 (5942-01)	DW	Atrazine	0.06 <sup>◇</sup>	8/20/97
3	Kilohana C (5923-03)	DW	Atrazine	0.15 <sup>◇</sup>	8/20/97
4	Kilohana G (5923-05)	DW	Atrazine	0.22 <sup>◇</sup>	8/20/97
5	Garlinghouse Tunnel (5823-01)	DW	Atrazine Desethyl Atrazine	0.10 <sup>◇</sup> <0.10 NQ	8/20/97 3/9/93

◇ - DOA Immunoassay analysis

# Groundwater Contamination on Molokai and Lanai



This map contains the latest confirmed results from contaminated groundwater wells

NO.	WELL NAME	USE	CONTAMINANT	DETECTED LEVEL (in ppb)	DATE SAMPLED
-----	-----------	-----	-------------	-------------------------	--------------

NO CONFIRMED CONTAMINANTS DETECTED



## Applicable Drinking Water Standards, Possible Health Effects and Potential Sources of Groundwater Contamination

<u>Common Name</u>	<u>Applicable Drinking Water Standards (in ppb) (3)</u>		<u>Possible Noncarcinogenic Effects. Based on Ingestion Effects on Animals (1)</u>	<u>EPA Carcinogen Rating (2)</u>	<u>Potential Contamination Sources</u>
Alachlor	2	MCL	Damaged red blood cells, causing kidney and spleen damage	Probable	Herbicide
Ametryn	60	LHA	Liver Damage	Unclassified	Herbicide
Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine	3	MCL	Heart and liver damage; fetal/child development retarded	Possible	Herbicide
Carbon Tetrachloride	5	MCL	Liver, kidney, and lung damage	Probable	Solvent, dry cleaning agent
Chlordane	2	MCL	Central nervous system, liver, kidney damage	Unclassified	Pesticide (termaticide)
1,2 Dibromo-3-chloropropane (DBCP)	0.04	SMCL	Male reproductive system, liver, and kidney damage	Probable	Pesticide (soil fumigant)
1,1-Dichloroethylene (DCE)	7	MCL	Central nervous system depression; a heart effect; liver and kidney damage	Possible	Solvent
1,2-Dichloropropane (DCP)	5	MCL	Gastrointestinal irritation, liver and kidney damage	Probable	Pesticide, Solvent
Dieldrin	0.002	10 <sup>-6</sup>	Central nervous system, liver, and kidney damage	Probable	Pesticide
Diuron	10	LHA	Central nervous system depression; damaged red blood cells, causing spleen damage; altered fetal development	Unclassified	Herbicide
Ethylene dibromide (EDB)	0.04	SMCL	Male reproductive system, liver, gastrointestinal, and adrenal gland damage	Probable	Gas additive, soil fumigant, solvent
Hexazinone	200	LHA	Reduced body weight or possibly reduced growth	Unclassified	Herbicide
Lindane	0.2	MCL	Nerve damage and central nervous system seizures; liver and kidney damage; suppression of the immune system	Probable	Insecticide

(1) Based on Health Advisories from the USEPA's Office of Drinking Water

(2) Based on estimates from the USEPA's Health Hazard Assessment Group

(3) See next page for definitions of Applicable Drinking Water Standards

## Applicable Drinking Water Standards, Possible Health Effects and Potential Sources of Groundwater Contamination (continued)

<u>Common Name</u>	<u>Applicable Drinking Water Standards (in ppb) (3)</u>		<u>Possible Noncarcinogenic Effects. Based on Ingestion Effects on Animals (1)</u>	<u>EPA Carcinogen Rating (2)</u>	<u>Potential Contamination Sources</u>
Simazine	4	MCL	Liver, kidney, and brain damage	Possible	Herbicide
Tetrachloro-ethylene (PCE)	5	MCL	Central nervous system depression; liver and kidney damage	Probable	Solvent, dry cleaning agent
Trichloro-ethylene (TCE)	5	MCL	Central nervous system depression; a heart effect; liver and kidney damage	Probable	Solvent
1,2,3-Trichloro-propane (TCP)	0.8	SMCL	Decreased red blood cells; liver and kidney damage	Unclassified	Solvent, trace contaminant in certain pesticides

(1) Based on Health Advisories from the USEPA's Office of Drinking Water

(2) Based on estimates from the USEPA's Health Hazard Assessment Group

(3) See below for definitions of Applicable Drinking Water Standards

### **(3) Definition of Applicable Drinking Water Standards**

#### **"MCL"**

means a maximum contaminant level or the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCLs are the only federally enforceable drinking water standards.

#### **"Lifetime Health Advisory" (LHA)**

describes a non-regulatory concentration of a drinking water contaminant at which adverse health effects would not be anticipated to occur over a lifetime exposure of 70 years duration. The advisories are based on data describing non-carcinogenic risk from such exposure. This is a non-regulatory standard.

#### **"SMCL"**

describes the State's maximum contamination level (which may be more stringent than the MCL) of a contaminant in water and applies to community and non-transient non-community water systems, as defined in Hawaii Administrative Rules, Title 11, Department of Health, Chapter 20 - Rules Relating to Potable Water Systems.

#### **"10<sup>-6</sup>"**

indicates those chemicals which EPA considers to be potential human carcinogens. EPA estimates a "cancer risk level" as the level at which an individual who consumes water over his or her lifetime (70 years) would have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing the contaminant. This is a non-regulatory standard.